



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

968745

SR-6J

July 12, 2021

William Dotterer
Senior Project Manager
Nationwide Environmental Services, Inc.

**Subject: Review of Groundwater Monitoring Report for Semi-Annual Monitoring Event
November 2020
Southeast Rockford Groundwater Contamination Site**

Dear Mr. Dotterer:

U.S. Environmental Protection Agency (EPA) has reviewed the above titled document issued February 2021 and prepared by Nationwide Environmental Services, Inc. (NES) on behalf of the City of Rockford for the Southeast Rockford Groundwater Contamination Superfund Site (SERGCSS) in Rockford, Illinois. General and specific comments are below.

EPA is not requiring a revision of the above titled report. It would be best to continue to move forward and implement these comments into the Semi-Annual 2021 Groundwater Monitoring Reports (and continue in future reports). If there are uncertainties or disagreements with any of the below comments please contact me so that we may discuss and agree on an appropriate path forward. A response to this comment letter is anticipated from NES prior the 2021 Groundwater Monitoring Report submissions.

General Comments

1. The site boundaries for SERGCSS are as defined in the 1995 OU2 Record of Decision (ROD). "The study area was later expanded to an area of ten square miles with boundaries that now include Broadway to the north, Sandy Hollow Road to the south, Mulford Road to the east and the Rock River to the west. The original site boundaries and current study area are noted on page 2 (Page 1 of 1995 OU2 ROD)."

Remove the "study area" outline in Figure 1 and legend description and replace with the "site boundary" as defined above. This is a global comment for all future figures involving the boundary of SERGCSS. This is important as other stakeholders, such as Illinois Department of Public Health have recently used these semi-annual groundwater reports to delineate the site; the "study area" is incorrect.

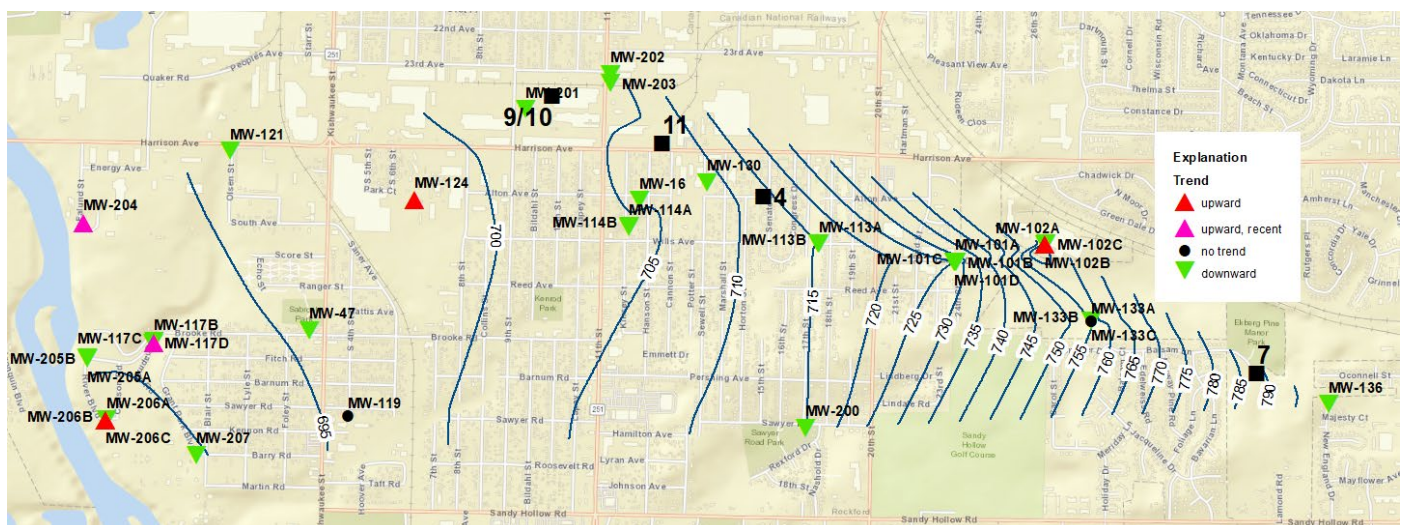
2. Although the introduction of this report indicates, "limited data interpretation summary", analytical data results and collected groundwater levels, at a minimum, need to be presented spatially to see distribution across the site and to assess operable unit 2 (OU2) groundwater sitewide conditions (e.g. natural attenuation, groundwater flow direction).
 - a. Analytical results should be plotted on a figure or figures with analyte concentration contour lines, as appropriate, so data can be visualized and understood spatially for each event. This is appropriate for total and select individual volatile organic compounds (VOCs) and 1, 4 dioxane results.

- b. Additionally, although the time-series plots show discrete information over time, seeing how the plume changes (using the OU2 monitoring well information) would benefit OU2 sitewide understanding. EPA is not suggesting that each season or each year be plotted all together, but based on evaluation of the trend data or other information (e.g. 1995 and 2012), specific past years could serve as “benchmarks” and warrant visualization along with the current presented data. For example, applying contour lines of screening levels/maximum contaminant levels (MCLs) and other larger incremental values (e.g. 10, 50, 100, 1000 ug/L, etc.), as appropriate, to the data set might provide a more substantive sitewide understanding from a figure than from discrete variability as shown on the plots. The plots are important, but do not provide a full picture of the OU2 sitewide analytical results. Locations where data are absent can have dashed contours in those areas.
- c. Groundwater elevation data should be presented as potentiometric maps with flow direction indicated. Areas of uncertainty can be presented as such (dashed lines). Include information on if the municipal wells were pumping during monitoring well sampling events.

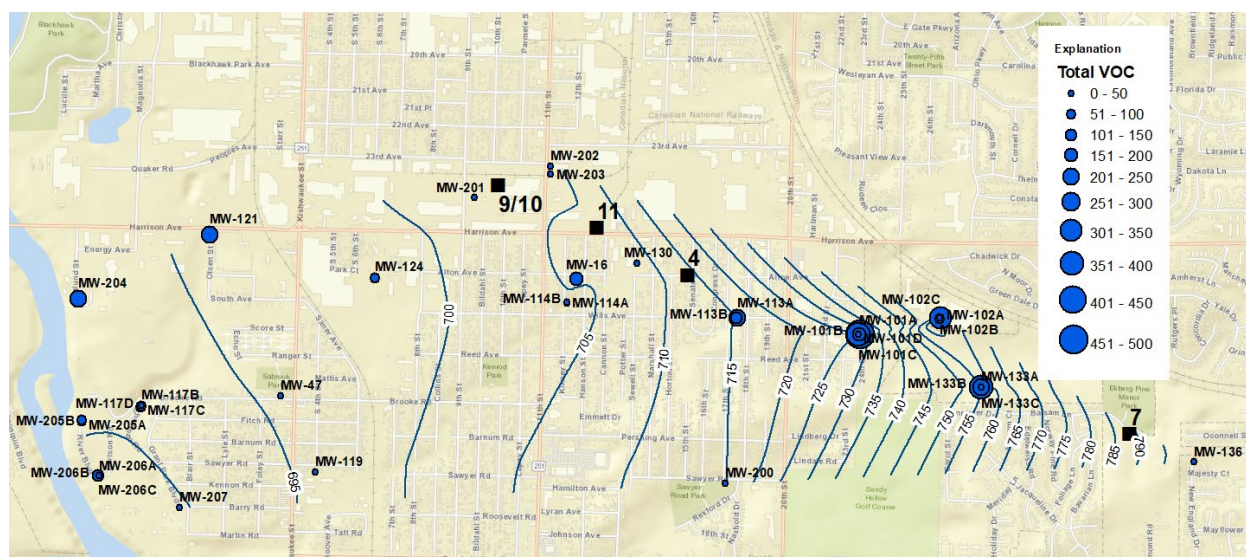
From Table 3, it appears that groundwater elevations across the site span more than 115 feet (ft) in elevation (685 ft above mean sea level (amsl) – 800 ft amsl). Are wells screened in more than one aquifer, or various hydrogeologic units that would possibly influence preferential flow of contaminants across the site? Groundwater elevations and flow information and assessment should be included in report text.

3. Additional types of figures to consider including in the reports to illustrate spatial distribution *and* trends are as follows. Please note, these screenshots presented below are not peer-reviewed and although the data are from November 2020 report, limited data were used (or from a particular depth range) and are for illustration only.

- a. A spatial plot of the trend direction (trend of up, down, or none for the recent past) could help reveal where problem areas are in one graphic. The plot below is of their linear trends as presented in Figure 2; not the recent past trend except for MW 204 and MW-117B.



- b. This plot combined with a plot of the magnitude of the most recent total VOC (see below) can further refine where the larger problem areas are in a more spatial way.



4. Please note that the Illinois Section 620 Groundwater Quality Standard for 1,4 dioxane is 7.7 $\mu\text{g/L}$. However, the state is in the process of promulgating 0.78 mg/L for 1,4 dioxane. 1,4 dioxane data should be screened against the 7.7 $\mu\text{g/L}$. However, the lower limit should also be considered, particularly when evaluating results that fall between 0.78 $\mu\text{g/L}$ and 7.7 $\mu\text{g/L}$.
5. A Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) will need to be prepared to include updated information including 1,4 dioxane sampling and analyses, electronic data deliverables to EPA, etc. and should be referenced in the groundwater monitoring reports.
6. Editorial Comment:
 - a. Spell out acronyms upon first usage in each report. For example, SPME, GC/MS with SIM, COC, VC, etc.
 - b. Well identifiers and chemical names used in the text, tables, and figures should be consistent throughout the document. Inconsistency in terminology could make searching documents and electronic data deliverables difficult. Examples from this report include
 - MW-101A vs MW101A
 - 1,4-dioxane vs. 1,4-Dioxane
 - MW-204 vs. MW 204

Specific Comments

1. **Page 1. Paragraph 5.** Graphs in Figure 2 are termed trend graphs, but the trend lines shown on these graphs have not been described and are not mentioned in the report text. There is no description of how the lines were computed (linear regression?), what they represent, or how they should be interpreted. Please include this information in the report text. Figure 2 graphs would more accurately be described as time-series plots.
2. **Page 3. Bullet 1.** “MW-203 was sampled with a portable low flow sampling pump. The permanent well pump installed in the well has been removed by an unknown party.” This appears to be a change in sampling procedure from the 2017 QAPP, therefore, additional details pertaining to the use of this pump (e.g. type, size, make, model), decontamination procedure

used, purge rate if different from the QAPP, sampling rate if different from the QAPP, and any other special pump considerations needs to be included in the body of the report as well as Appendix B. There is no mention or indication of the alternate pump mentioned on the Field Report page for MW-203. The same sentence, as quoted above, is included at the beginning of Appendix B, no other details were found about this change from the UFP-QAPP sampling procedure. A “Deviations and Issues” (or similarly named) section should be added to future reports to document and track such changes.

3. **Page 3, Paragraph 4. Sentence 2.** Revise this paragraph to include the following.
 - a. Please include a comprehensive list of variability factors, particularly if no evaluation of potential variability causes is conducted. This list could include natural degradation, volatilization, dispersion, dilution, and sorption of the VOCs. Variability could also be caused from episodic inputs of the contaminants of concern (COCs) at source areas rather than a continued relatively constant leaching from source area(s).
 - b. What groundwater pumping rates are being referred to in this sentence (e.g. pumping during sampling, pumping from nearby private, industrial, or municipal supply wells)?
 - c. If known pumping wells exist and influencing the monitoring wells, these should be shown on a Figure(s) and their impact discussed (are they actively pumping during sampling, what is the rate, what is the impact, etc.).
4. **Page 3. Paragraph 5.** Has there been an evaluation of how/if groundwater elevation fluctuations impact COC concentrations? This is a straightforward evaluation that should be included and discussed in the semi-annual monitoring reports.
5. **Page 4. Text and Tables.**
 - a. Exceedances of MCLs are described in the report text. A table or list in the text that show the MCL values for the COCs would be useful.
 - b. Highlight concentration values that exceed MCLs in the table below, and similar ones in this section of the report (to be consistent with Table 2a). Include report text (and table notes where applicable) that highlighted values indicate a result exceeds the MCL.

The analytical results for groundwater quality samples collected from well locations proximate to or downgradient from Area 7 which show material increases (>20%) in COC concentrations from the previous monitoring event are summarized below.

Monitoring Location	Compound	Current Conc. (ug/L)	Prior Conc. (ug/L)
MW 101A	1,1,1-TCA	91.4	23.7
	1,1-DCA	43.7	19.6
	1,1-DCE	8.4	2.2
	CFM	2.9	0.53
	cis-1,2-DCE	26.1	4.5
	PCE	6.6	1.4
	trans-1,2-DCE	1.8	0.65
	TCE	11.4	2.5

6. **Figure 1.**
 - a. Change the study boundary as described in General Comment #1.
 - b. Indicate the reference for the yellow plume, instead of “circa 1995”. There is also a 2012 sitewide plume evaluation (included source areas data). Figure 1 Site Map could include the “baseline” 1995 OU2 plume and the 2012 sitewide plume. Does NES have a more recent plume extent than 2012 they could also include? Note, there will be a 2021 sitewide plume evaluation inclusive of source areas data.
 - c. Also, what does the yellow inside the plume indicate? Total VOC concentrations greater than ...? Or Total VOC concentration detections vs non detects. Please specify.

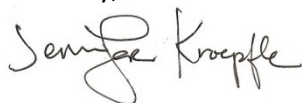
7. **Figure 2.** As mentioned in Specific Comment #2, there is no description in the report text what the dashed lines on the graphs in Figure 2 represent or how they were determined, this information needs to be included in the text and also in the figure legend. Consider the following in evaluation of the data over time:
- a. LOWESS (locally weighted scatterplot smooth): In several cases, the dashed lines don't represent the trend of the data all that well (poorly correlated linear trend, if regression?). A couple noted examples are MW-102C and MW-203 where there is greater variability in the data over time than in some other monitoring wells; and MW-204, MW-117B, and MW-124 that show an overall decreasing trend, but the last several years have shown a substantial increase in total VOCs. The data variability would be captured better in a LOWESS curve than a linear regression line while still providing a general trend that could be examined more closely over shorter segments (e.g. particularly over the last few years). The trend over the last 2-3 years set in a context of the trend over the historical period would be more indicative of the progress toward managing the cleanup of this Site than the overall linear trend from 1993 – present.
 - b. Trend Test: Consider using Mann-Kendall, Sen's, or similar trend analysis to evaluate trends over time as stable, decreasing, or increasing.
8. **Tables 3 and 4.**
- a. Top of casing (TOC) well depth is not the same for MW-16, MW-47, MW-101A, MW-102A, MW-102B, MW-102C, MW-114A, MW-114B, MW-117D, MW-201, MW-205A, MW-205B, and MW-206C in the two tables. It is noted that the TOC well depth is from field reports on Table 4, but shouldn't it match the values in Table 3? The values of total depth below ground surface (bgs) and TOC should be verified on both tables.
 - b. According to Table 4, wells MW-117C and MW 204 are completed more than 1-foot bgs. This depth interval seems large and should be verified particularly in wells that are 0.5 feet or greater below the land surface (e.g. MW-113A, MW-136, MW-203, MW-206B, MW-206C).
 - c. When subtracting the water level in Table 3 from the TOC elevation in Table 4 several water levels are different than what is reported in Table 3. These values should be verified. The assumption was made (because it was not documented in the report) that the water level reported in Table 3 references TOC. Note, these discrepancies appear to coincide with wells that were footnoted in Table 4 as having been adjusted to reflect a 2017 survey. Please revise or include document discrepancies/changes as appropriate (see table below).

name	date	WL	TOC elev (table 4)	WL elev (table 3)	WL elev check (TOC tab 4 - WL)	Diff
MW-16	11/18/2020	19.46	725.57	708.45	706.11	2.34
MW-47	11/14/2020	39.93	735.23	695.73	695.3	0.43
MW-101A	11/16/2020	38.45	765.62	727.17	727.17	0
MW-101E	11/16/2020	39.4	766.62	727.22	727.22	0
MW-101C	11/16/2020	39.3	766.48	727.18	727.18	0
MW-101F	11/18/2020	41.7	764.96	723.26	723.26	0
MW-102A	11/16/2020	17.83	782.69	770.6	764.86	5.74
MW-102E	11/16/2020	32.25	783.01	756.36	750.76	5.6
MW-102C	11/16/2020	33.64	783.13	756.23	749.49	6.74
MW-113A	11/17/2020	50.88	766.54	715.66	715.66	0
MW-113E	11/17/2020	51.59	766.65	715.06	715.06	0
MW-114A	11/18/2020	23.81	725.15	703.08	701.34	1.74
MW-114E	11/18/2020	25.29	725.24	699.73	699.95	-0.22
MW-117E	11/13/2020	5.18	696.26	691.08	691.08	0
MW-117C	11/13/2020	3.81	696.11	692.3	692.3	0
MW-117D	11/13/2020	3.42	696.1	692.68	692.68	0
MW-119	11/14/2020	22.92	718.97	696.05	696.05	0
MW-121	11/15/2020	20.31	716.98	696.67	696.67	0
MW-124	11/18/2020	33.18	731.3	698.12	698.12	0
MW-130	11/17/2020	19.94	727.95	708.01	708.01	0
MW-133A	11/18/2020	27.53	780.18	752.65	752.65	0
MW-133E	11/18/2020	25.62	780.33	754.71	754.71	0
MW-133C	11/18/2020	21.52	780.29	758.77	758.77	0
MW-136	11/14/2020	34.32	834.77	800.45	800.45	0
MW-200	11/17/2020	45.38	760.16	714.78	714.78	0
MW-201	11/15/2020	27.52	728.51	701.51	700.99	0.52
MW-202	11/15/2020	26.37	729.62	703.25	703.25	0
MW-203	11/15/2020	25.85	729.09	703.24	703.24	0
MW-204	11/17/2020	26.25	717.21	690.96	690.96	0
MW-205A	11/13/2020	5.38	696.69	691.24	691.31	-0.07
MW-205E	11/13/2020	5.47	696.92	691.25	691.45	-0.2
MW-206A	11/13/2020	8.35	693.7	685.35	685.35	0
MW-206E	11/13/2020	6.58	693.26	686.68	686.68	0
MW-206C	11/13/2020	6.36	693.53	686.7	687.17	-0.47
MW-207	11/14/2020	34.65	724.17	689.52	689.52	0

- d. Wells MW-102B and MW-102C have location coordinates that are integer numbers (no digits to the right of the decimal). It seems to be unusual for surveyed data to be integer values. These coordinates should be verified and corrected as appropriate.

If you have questions, please call me at (312) 886-7153.

Sincerely,



Jennifer Knoepfle, Ph.D., P.G.
Remedial Project Manager

cc (via electronic mail):

Nadine Miller, Water Quality Supervisor, City of Rockford
Brian Conrath, Project Manager, Illinois Environmental Protection Agency
Tom Turner, Attorney, EPA ORC
Joe Richards, Hydrogeologist, USGS